

WHAT IS CLAIMED IS:

1. An optical write head comprising a substrate, and a plurality of light-emitting device array chips arranged on the substrate in a straight line or in a staggered layout so as to 5 oppose a gradient index rod lens array, each of the light-emitting array chips having a light-emitting device array, wherein the rod lens array, a substrate support member for supporting the substrate, and a driver circuit board are fixedly held by a support member.

10 2. The optical write head according to claim 1, wherein the support member and the substrate support member are formed from metallic material.

15 3. The optical write head according to claim 1, wherein at least one of frames of the rod lens array to be bonded to a support member is a glass plate.

20 4. The optical write head according to claim 1, wherein a plurality of adhesive injection holes are formed in a surface of the support member with which the rod lens array is to be brought into contact, the holes being arranged along a longitudinal direction of the rod lens array and being formed so as to penetrate through the support member to a reverse side thereof.

25 5. The optical write head according to claim 1, wherein at least one slit of V-shaped cross section for injecting an adhesive is formed in a portion of the surface of the support member to be brought into contact with the rod lens array, so

as to extend in the longitudinal direction of the rod lens array, and a plurality of adhesive injection holes are formed in the slit so as to penetrate through the support member to a reverse side thereof.

5 6. The optical write head according to claim 1, wherein at least two positioning pins are provided at predetermined positions on the support member.

7. The optical write head according to claim 1, wherein at least two rotatable eccentric pins penetrating through the 10 support member are provided so as to come into contact with the substrate support member.

8. A method of assembling the optical write head according to claim 7, wherein the at least two eccentric pins are rotated, to thereby move the substrate support member kept in contact 15 with the eccentric pins and adjust the distance between a light-emission section of the light-emitting device array and a light-incident end face of the rod lens array.

9. A method of assembling the optical write head according to claim 1, wherein the light-emitting device array chips are 20 die-bonded to the substrate bonded to a predetermined location on the substrate support member while being positioned with respect to a reference plane of the substrate support member.

10. An optical write head comprising a substrate, and a plurality of light-emitting device array chips arranged on the 25 substrate in a straight line or in a staggered layout so as to

oppose a gradient index rod lens array, each of the light-emitting array chips having a light-emitting device array, wherein the light-emitting device array chips are mounted directly on a flexible printed circuit sheet.

5 11. The optical write head according to claim 10, wherein the reverse surface of a light-emitting array chip mount section of the flexible printed circuit sheet is disposed in close contact with a member having rigidity.

10 12. The optical write head according to claim 10, wherein the flexible printed circuit sheet is of multilayer type and comprises a resin layer and a copper foil, and no adhesive is interposed between the resin layer and the copper foil.

15 13. The optical write head according to claim 10, wherein the flexible printed circuit sheet has a thickness of 30 to 50 μm .

14. The optical write head according to claim 10, wherein the light-emitting array is a self-scan-type light-emitting array.

20 15. The optical write head according to claim 10, wherein reference position marks for specifying respective positions at which the light-emitting array chips are to be arranged are provided on the surface of the member which has rigidity and is disposed in close contact with the flexible printed circuit sheet.

25 16. A method of assembling an optical write head, comprising the steps of:

bonding a portion of a flexible printed circuit sheet to a member having rigidity;

arranging a plurality of light-emitting device array chips at predetermined positions on the flexible printed circuit sheet 5 in the form of a straight line or in a staggered layout and bonding the light-emitting device array chips directly to the flexible printed circuit sheet;

10 electrically connecting the light-emitting array chips to predetermined wire bonding pads provided on the flexible printed circuit sheet by means of wire bonding; and

fixing the member having rigidity at a predetermined position on a support member having a rod lens array and a light-emitting device array driver circuit board mounted thereon beforehand.

15 17. An optical write head comprising a flexible circuit sheet remaining in close contact with a member having rigidity, and a plurality of light-emitting device array chips arranged on the flexible circuit sheet in a straight line or in a staggered layout so as to oppose a gradient index rod lens array, each 20 of the light-emitting array chips having a light-emitting device array, wherein the member having rigidity is a metallic member substantially equal in coefficient of thermal expansion to the rod lens array.

25 18. An optical write head comprising a flexible circuit sheet remaining in close contact with a member having rigidity, and a plurality of light-emitting device array chips arranged

on the flexible circuit sheet in a straight line or in a staggered layout so as to oppose a gradient index rod lens array, each of the light-emitting array chips having a light-emitting device array, wherein the member having rigidity is a metallic member 5 substantially equal in coefficient of thermal expansion to the light-emitting device array chips.

19. The optical write head according to claim 17 or 18, wherein a frame of the rod lens array is formed from glass, and the metallic member is a nickel alloy or titanium.

10 20. The optical write head according to claim 17 or 18, wherein the light-emitting device array is a self-scan-type light-emitting device array.

21. An optical write head comprising:
a support member having first and second reference planes;
15 a gradient index rod lens array having gradient index rod lenses arrayed in at least one row and a frame that supports the rod lenses and that is fixed to the first reference plane;
a substrate support member fixed to the second reference plane;

20 a flexible printed circuit substrate fixed to the substrate support member; and

25 a plurality of self-scanning, light-emitting device array chips that are provided to the flexible printed circuit substrate and that have light-emitting devices optically aligned with respect to the respective gradient index rod lenses.

22. The optical write head according to claim 21, wherein the first reference plane is flush with the second reference plane.

23. The optical write head according to claim 21, wherein 5 the first reference plane is parallel to the second reference plane.

24. The optical write head according to claim 21, wherein each of the support member and the substrate support member is made of metal.

10 25. The optical write head according to claim 21, wherein the frame is made of glass.

26. The optical write head according to claim 21, wherein the light-emitting device array chips are fixed to the flexible printed circuit substrate after the flexible printed circuit 15 substrate is fixed to the substrate support member.

27. The optical write head according to claim 26, wherein the substrate support member is substantially equal in coefficient of thermal expansion to the light-emitting array chips.

28. The optical write head according to claim 21, wherein 20 the substrate support member is substantially equal in coefficient of thermal expansion to the gradient index rod lens array.

29. An optical printer comprising:

a photosensitive drum;

the optical write head constructed according to claim 21
25 and arranged around the photosensitive drum so that the gradient

index rod lenses are confronted with the photosensitive drum;
an electrostatic charger arranged around the photosensitive
drum;

5 a development unit arranged around the photosensitive drum;
a transfer unit arranged around the photosensitive drum;

and

a fixing unit arranged downstream of the transfer unit with
respect to a paper feeding direction.